

Read the selection below and answer the questions that follow it.

The Chemistry Behind Ice Cream

Making your own ice cream is a great way to cook with chemistry. Put the ice cream mixture in a small sealed can and the ice and salt mixture in a larger outer can. Shake the sealed unit for five to eight minutes and then eat a sweet treat!

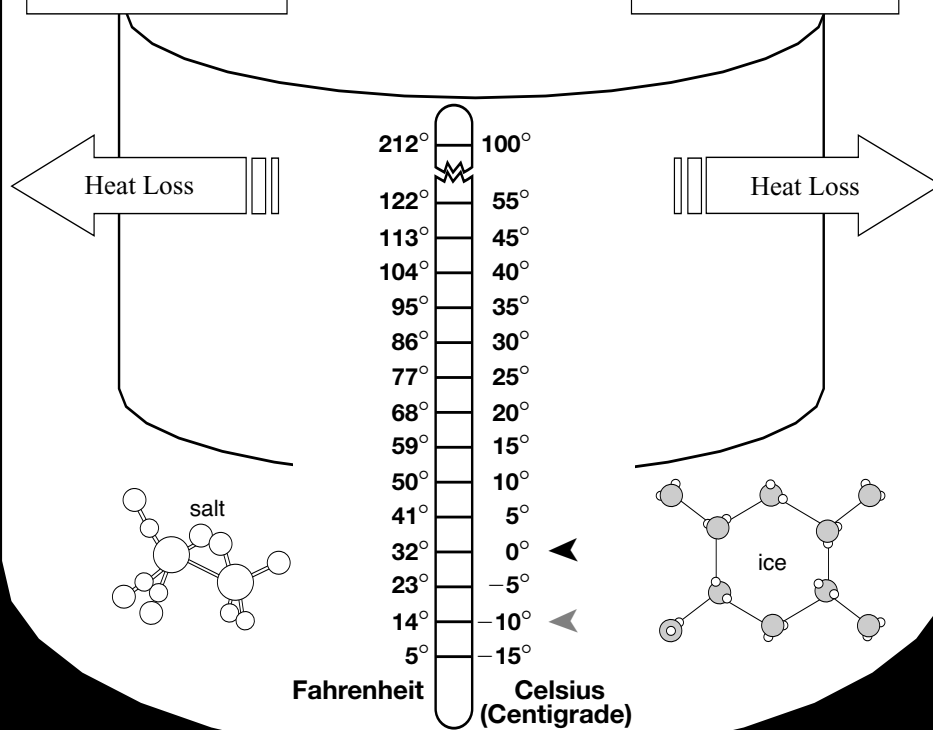
Ice reduces the temperature of the cream to the freezing point of water (0°C), but this is not cold enough to freeze the cream, which has a lower freezing point than water. Adding salt to the ice forces the ice to melt at a lower temperature, which in turn lowers the temperature of the cream to about -10°C , where it can freeze.

Ice Cream Mixture:

125 mL whole milk
60 mL sugar
5 mL vanilla

Ice and Salt Mixture:

1 L ice
60 mL salt



The making of ice cream is an exothermic process, meaning heat must escape the ice cream mixture in order for it to change forms from liquid to solid. Without the addition of salt, ice cream could not be made.

◀ Freezing point of ice cream

◀ Freezing point of water

Multiple-Choice (Record the best or most correct answer on the Student Answer Sheet.)

- 1** What allows the exothermic process to take place in the making of ice cream?
- a shaking the sealed unit
 - b sealing one can inside the other
 - c adding salt to the ice cream mixture
 - d surrounding the inner can with ice and salt
- 2** Text boxes are used in this selection to
- a highlight contrasting information.
 - b organize information in a sequence.
 - c separate different kinds of information.
 - d present information in a scientific way.
- 3** The thermometer shows both Fahrenheit and Celsius (Centigrade) because
- a the ice cream changes temperature quickly.
 - b the ice and salt have different temperatures.
 - c there is a small sealed can inside a larger outer can.
 - d there is more than one standard scale of temperature.
- 4** The small sealed can is placed inside the larger outer can to allow
- a the small can to float.
 - b the salt to enter the small can.
 - c the ice to melt inside the small can.
 - d the mixture inside the small can to freeze.
- 5** The large arrows on the diagram indicate that the temperature in the small sealed can is
- a increasing.
 - b decreasing.
 - c remaining at a constant level.
 - d becoming warmer and then cooler.
- 6** The purpose of the information in italics at the bottom of the selection is to
- a define a process in making ice cream.
 - b list the chemicals used in making ice cream.
 - c encourage the reader to try making ice cream.
 - d describe a final step in the making of ice cream.